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AN

INAUGURAL DISSERTATION

ON THE USE OF THE

DIGITALIS PURPUREA

IN THE

CURE OF CERTAIN DISEASES.

SUBMITTED TO THE PUBLIC EXAMINATION

OF

SAMUEL BARD, M. D. President;

THE

VICE-PRESIDENT AND PROFESSORS

OF THE

COLLEGE OF PHYSICIANS

UNDER THE AUTHORITY OF THE

UNIVERSITY OF THE STATE OF NEW-YORK,

FOR THE DEGREE OF

DOCTOR OF MEDICINE,

On the fourteenth day of May, 1811.

BY THOMAS EDWARD STEELL,
of New-Jersey.

From facts and reason we our precepts draw
The firmest basis of the soundest law;
Whence nature's powers in fullest vigour rise,
And fell disease with all its phalanx flies. *Darwin.*

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1811.

TO

DOCTOR THOMAS STEELL,

THIS

DISSERTATION

IS

MOST RESPECTFULLY DEDICATED,

AS A

SMALL TESTIMONY

OF

RESPECT, GRATITUDE AND AFFECTION,

BY HIS SON.

CONTENTS.

AN

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ON THE USE OF THE

DIGITALIS PURPUREA, &c.

INTRODUCTION.

THE wide difference in the treatment of similar diseases in this country and Great-Britain, is surprising, and in some cases almost unaccountable.

The same circumstance occurs in the employment of particular remedies in certain classes of disease. This observation applies with great force to the employment of the digitalis purpurea. This great abstractor of arterial action is employed with most advantage in acute diseases of high excitement in the United States, the proof of which will be attempted in this dissertation: while its exhibition in Europe has been confined to dropsy, pulmonary consumption, and other diseases of debility.

Thus Peruvian bark too, which we only use in the convalescent stages of disease, has been found serviceable in England in the inflammatory stage

of acute rheumatism.* My own observations would prompt me to reject such practice, and this opinion is confirmed by Dr. Miller's observations and trials in the New-York Hospital, in the winters of 1807–8, where several cases happened in which fair experiments demonstrated the impropriety of the practice.

Climate, soil, government, and other causes operate in producing a difference in the symptoms of diseases and their consequent treatment. These no doubt have their full operation. But there is another cause that affects nations as opinions do individuals. Hence arises a national practical prejudice, if we may so call it. Dr. Rush observes, that " whole nations are as much distinguished by it as they are by language and manners. In England, cordial and sweating medicines; in France, bleeding, injections, and diluting drinks; in Germany, alterative medicines; in Italy, cups and leeches; in Russia, hot and cold baths; and, in China, frictions, constitute the predominating and fashionable remedies in all their respective diseases."†

Universities tend to establish such opinions and practice when they do not allow that liberal discussion and expression of sentiment which is peculiar to the government and medical institutions of the United States. National ideas may thus contribute to the adoption of digitalis in opposite diseases. Be this as it may; it is intended in this dis-

* Notes on Dr. Miller's Clinical lectures.

† Six Introductory Lectures, published in Philadelphia, 1801.

sertation to establish, by practical observations and facts, the proper use of digitalis. This will be found in the free use of it in inflammatory diseases, or those which are occasionally attended with symptoms of excitement, but are generally diseases of debility. I would agree with Dr. Quin* in the use of digitalis in hydrocephalus, as that is truly a disease of excitement.†

Did national opinions introduce the improved treatment of parturient women into the United States? We are greatly indebted to Dr. Archer,‡ of Maryland, and Dr. Dewees,§ of Philadelphia, for the depleting system which is now generally pursued here with success. In the British practical works (which have generally been our text books) on midwifery, many pages are generally taken up with accounts of puerperal fever,‖ while, by the American treatment of lying-in women, this disease is almost exterminated. While stimulant diet and drinks were slaying their thousands, these same authors were disputing the origin and nature of the disease. I have been informed by a person who attended Dr. Dewees's¶ lectures on midwifery, that of the great number of patients delivered by him, three only had been attacked by puerperal fever, and these by the obstinacy of

* Quin on Dropsy of the Brain.
† Rush's Med. Inquiries.
‡ See Med. Repos. vol. i. p. 323.
§ Dewees's Inaug. Dissert. Phila. 1806.
‖ Denman, White, Leake, &c.
¶ Dr. Dewees practised a number of years in the city of Philadelphia, and after giving several courses of private lectures on midwifery, published a practical inaugural dissertation, illustrated by most important cases.

nurses, who refused to attend to his directions respecting diet. If digitalis was used in cases of parturition, where bleeding would be serviceable, might we not do it with less ease and more certainty, particularly in those instances where opposition arises from fear or prejudice, or the interference of friends?

I would observe further, that the aphthous state of fever requires also in the United States a method of treatment different from that which it receives in Great-Britain. Instead of depending on an undue share of alkalescency in the blood, or other humours of the system, it is generally marked by the predominance of an acid, at least in the alimentary canal, and particularly in the alimentary canal of children. Hence the good effects derived from the exhibition of salt of tartar, magnesia, and other absorbents, considered in the light of mere local remedies.

The opinions of physicians respecting the use of digitalis, differ as widely as their practice, or the experiments and cases produced to prove the particular efficacy of its virtues. It was formerly considered, and I believe properly, as a sedative, an abstractor of stimulus or excitement. Of late years, however, it has been considered as an excitor, and applied accordingly. I am in hopes to show this to be a fallacious result of partial observation and experiment. I find, however, by my inquiries among physicians of this place, that a majority of them are friendly to my sentiments on this subject. Analogical reasoning, correct in many instances, but fallacious in more, when applied to

medical subjects, has been employed to prove digitalis a stimulant. It has been compared to opium in its effects,* and the inference has apparently been a fair one. Dr. Moore says, " Let us take a short view of their similar effects on the living system. Opium increases the frequency and fulness of the pulse; digitalis very frequently does the same. Opium produces sometimes an increased flow of saliva; so will digitalis. Opium produces profuse perspiration; one of the patients in the Alms-house who took digitalis, had, for the first three or four days, more copious perspiration than before. Opium is sometimes a diuretic; this is one of the most prominent effects of digitalis. Who has not in some instances seen opium prove laxative? Digitalis purged in several of the experiments when I gave it to the healthy subject. Opium in a large dose produces vertigo, confused vision, thirst, and stertorous respiration; the same effects follow large doses of digitalis."

This is Dr. Moore's view of the subject touching that point. In this account he has compared constant effects with accidental circumstances. Were I to compare their effects, this should be my statement: Opium has a stimulant effect, so has digitalis; but that of opium is much more lasting. The stimulant effect of opium is also much greater than that of digitalis. The specific effect of opium is more certain than that of digitalis. The secondary effects of opium and digitalis are

* See Moore on Digitalis, in Caldwell's Medical Theses, 1805, p. 205.

widely different, the former being more lasting. In large doses they produce effects apparently similar, but really different.

The want of analogy between these two articles of the Materia Medica will be still more evident by what follows. Opium cannot be used in the cure of inflammatory diseases till the febrile symptoms have subsided, and then in many cases it is unnecessary; but where it is necessary it acts as a cordial in reviving the spirits and giving strength. Digitalis may be given with a direct contrary effect. It will reduce febrile excitement, and is dangerous in the debility of convalescents; for though it at first increases the number of arterial pulsations, it afterwards diminishes them in a greater ratio than the increase, according to the time. A parallel of this kind might be lengthened, if it would lead to the desired certainty of the operation of digitalis; but I shall proceed to a less diffuse consideration of the subject.

SECTION I.

Description of the Digitalis Purpurea.

The digitalis purpurea is an European plant, a native of Great-Britain, where it grows by the road sides and along the hedges, but on account of its beauty and medical qualities, has become an ornamental garden plant. It has been introduced into the United States, and lost none of its virtues by transportation. In Linnæus's system of botany it

is arranged under the class *didynamia* and order *angiospermia*. Since the plant is well known, and has often been described, my limited knowledge of botany will be an excuse for the following account, taken from Dr. Woodville's celebrated work on medical botany.*

" The root is biennial, branched, and fibrous; the stalk is erect, simple, tapering, covered with fine hairs or down, and rises commonly to the height of four or five feet; the leaves are large, oval, narrowed towards the points, obtusely serrated, veined, downy, and stand upon short-winged footstalks; the flocal leaves, or bractea, spear-shaped, sessile, purplish towards the point; the calyx consist of five segments, which are eliptical pointed, nerved, or ribbed, and the upper segment is narrower than the others; the flowers grow in a long terminal spike, chiefly on one side; they are large, monopetalous, pendulous, bell-shaped, purple, and marked on the inside with little eyes, or dark coloured dots, placed in whitish rings; the tubular part appears inflated, and almost cylindrical, but swelling towards the base, and opening at the limb into four irregular, short, obtuse segments; of these the uppermost is the shortest, appearing truncated, or cut off transversely; the peduncles are round, short, villous, and bend downwards by the weight of the flowers; the filaments are two long, and two short, white, crooked, inserted in the bottom of the tube, and crowned with large, oval, yellow antheræ; the style is simple, and thickening

* Vol. i. p. 71. 4to. London. 1790.

towards the stigma, which is bifid; the germen is oval, and surrounded at the bottom by a small nectarious gland; the capsule is bilocular, and contains many blackish seeds. It grows commonly about road sides and hedges, especially in dry gravelly soils, and flowers in June or July."

" The leaves of foxglove have a bitter nauseous taste, but no remarkable smell; they have been long used externally to sores and scrophulous tumours, with considerable advantage. Respecting the internal use of this plant, we are told of its good effects in epilepsy, scrophula, and phthisis; but the incautious manner in which it was employed rendered it a dangerous remedy; thus we find Ray (after reciting the case of epilepsy cured by it, as mentioned by Parkinson) says, 'Verum medicamentum hoc robustioribus tantum convenit sequidum violanta admodum purgat, et vomitiones immanes excitat:' and others, speaking of its successful exhibition in scrophula, remark, 'Sed ob nemiam remedii vehementiam continuationem ejus necessarium detrectavit.' Yet while digitalis was generally known to possess such medical activity, its diuretic effects, for which it is now deservedly received in the Materia Medica, were wholly overlooked; that to this discovery Dr. Withering has an undoubted claim, and the numerous cases of dropsy related by him and other practitioners of established reputation, afford incontestible evidence of its diuretic powers, and of its practical importance in the cure of those diseases. From Dr. Withering's extensive experience of the use of digitalis in dropsies, he has

been enabled to judge of its success from the following circumstances:—It seldom succeeds in men of great natural strength, of tense fibre, of warm skin, of florid complexion, or in those of a tight and cordy pulse. If the belly in ascites be tense, hard, and circumscribed, or the limbs in anasarca solid and resisting, we have but little hope. On the contrary, if the pulse be feeble, or intermitting, the countenance pale, the lips livid, the skin cold, the swollen belly soft and fluctuating, the anasarcous limbs readily pitting under the pressure of the finger, we may expect the diuretic effects to follow in a kindly manner." Of the inferences which he deduces the fourth is, " that if it (digitalis) fails there is but little chance of any other medicine succeeding." Thus we are to infer, that men of great natural strength, and under the other circumstances just mentioned, when affected with dropsy, have little to hope for from this diuretic, and still less from any other medicine. As this observation is the result of experience, and of considerable practical consequence, we wish particularly to press it on the attention of the medical reader. Although the digitalis is now generally admitted to be a very powerful diuretic, and many cases may be adduced of its successful use, in addition to those already published, yet it is but justice to acknowledge that this medicine has more frequently failed than could have been reasonably expected from a comparison of the facts stated by Dr. Withering.

" The dose of the dried leaves in powder is from one grain to three twice a day. But if a liquid medicine is preferred, a drachm of the dried leaves is

to be infused for four hours in half a pint of boiling water. One ounce of this infusion given, twice a day, is a medium dose. It is to be continued in these doses till it acts upon either the kidnies, stomach, the pulse (which it has a remarkable power of lowering), or the bowels."

SECTION II.

The assignable Qualities of Digitalis.

Having given a description of the plant from whence our medicine is derived, and in which some of its medical qualities are mentioned, we shall now proceed to notice other qualities ascribed to it, and examine into their several merits.

" Its effects when swallowed are,

" 1st. To diminish the frequency of the pulse.

" 2d. To diminish the irritability of the system.

" 3d. To increase the action of the absorbents.

" 4th. To increase the discharge by urine."*

" 1st. To diminish the frequency of the pulse." This first great point being ascertained, establishes the most important view of the subject to which I would particularly invite attention, since this alone would render it a most powerful auxiliary to the cure of many diseases in the hands of the medical practitioner. My particular view of the subject will tend to establish this point more clearly, both by experimnts, and by cases which

* Coxe's American Dispensatory.

will accord with deductions made from those experiments. From this power of digitalis on the pulse, it might properly be given, first, in inflammatory diseases, and, second, in active hemorrhages.

" 2d. To diminish the irritability of the system." On the power which digitalis possesses over the pulse, in all probability depends its power of diminishing irritability, by first diminishing excitement. Hence in may be useful, first, in many cases of mania; second, in delirium, particularly that attending diseases of high excitement.

" 3d. To increase the action of the absorbents." If we could rely upon its uniform effects upon the absorbent system, its use in scrophula, dropsy, and phthisis would be much more certain.

" 4th. To increase the discharge of urine." The diuretic effects of digitalis is doubtful and uncertain, at least in a sufficient degree, both as to extent and uniformity to make it an efficient remedy in dropsical diseases. Granting, however, that it may be diuretic, its power over the pulse will add one and subtract two, except in certain cases, as will hereafter be mentioned. But its diuretic effects, as far as our experiments prove, are trifling and precarious. This, however, is anticipating the subject.

Dr. Withering has the credit of first making known the diuretic powers of digitalis, and his subsequent practice would confirm the apparent fact. Great names carry great weight in their favourite opinions. The established character of Dr. Withering gave his opinions currency. Now it seems

he either conceived or discovered that diuresis followed its use; hence the bent of his practice went to prove this point. The opinions and deductions that I have made from the use of digitalis, arose from reflecting on its power over the pulse, and having cases presented for consideration. Perhaps, as I have before observed, there may be some difference between the constitutional effects of the atmosphere of this country and Great-Britain. But Dr. Lettsom, of London, failed with digitalis in dropsy, according to Dr. Withering's plan.* I am hence inclined to trust more to the two first qualities which are ascribed to digitalis, than to the others, as the foundation of correct practice with this medicine.

SECTION III.

The Preparations of Digitalis used.

It belongs to the Materia Medica to accommodate remedies to the taste of the patients, in order or meet prejudice, age, habit, antipathy, and the like. Hence arise the different preparations of tinctures, decoctions, infusions, syrups, pills, powders, &c.

Digitalis has been generally conveyed in one of the four following forms, viz. in substance, in tincture, in infusion, or in decoction.

1st. In substance. The most effectual mode of prescribing digitalis is in pill or powder. In either

* See Memoirs of the Medical Society of London, vol. ii. p. 145.

of these forms it may be given to the quantity of one, two, or more grains, twice or oftener in a day, according to the elevation of the pulse and the urgency of the febrile symptoms. From the vertigo, nausea, and vomiting which large doses, three grains and upwards, produce, it would be adviseable, if the case require it, to give two grains and under at a dose, and repeat it several times a day. In some cases, two grains may safely be given four times a day, and one grain six times and oftener. A careful observation of the pulse, however, should regulate the frequency of the repetition.

The preparation of the powder of digitalis is easy and simple, and should be known by every one who wishes the true unadulterated drug. It growing in dry gravelly soils, is easily cultivated. the mature leaves of the plant being collected, it should be dried gradually by a gentle fire; but least the heat should dry it too hastily, and evaporate too much of its moisture, it might be dried by the heat of the sun with more advantage. The middle stalk of the leaf should be rejected, and, when dried, it is easily reduced to a fine powder.

2d. In tincture. Digitalis may be given in this form to the amount of five, ten, or even fifty drops three times a day, to an adult. Like all other medicines, when the system becomes accommodated to its action, it may be gradually increased. The following is the most adviseable mode of preparing the tincture: Digest one ounce of the dried leaves in eight ounces of diluted alkohol for seven days, then strain it through paper.

3d. In infusion. An ounce of the infusion of digitalis may be given from twice to four times a day—two ounces daily—make a medium dose, and will hence be diminished or increased, as circumstances require. It is made by pouring eight ounces of boiling water on a drachm of the dried leaves, and letting it stand for several hours.

4th. In decoction. Boiling extracts the active qualities of substances much sooner than either spirit or cold water. Hence the expediency of administering decoctions when the urgency of the case requires expedition, and the medicine must be conveyed in a liquid form. A drachm of the leaves of digitalis may be boiled in ten ounces of water till reduced to eight. An ounce of this is a dose for an adult, repeated thrice or oftener in a day.

SECTION IV.

Deductions from Experiments on Digitalis.

My opinions of the operation of digitalis are deduced from its effects on the pulse. I was about to institute a set of experiments for the purpose of ascertaining this point, when some already made occurred to me, which will verify my ideas on the subject, though they were made, and have been used to substantiate an opposite opinion, viz. that digitalis is a stimulus. These experiments, when properly analyzed, together with the cases which shall hereafter be presented, will, it is hoped, place

the operation of this medicine in a clear point of view, and remove every objection to its employment in diseases of excitement. The experiments alluded to are to be found in Dr. Moore's Inaugural Dissertation.* Such of these experiments as time has allowed me to repeat, have terminated with a similar result. They were made with digitalis officinally prepared. The first operation was in most cases to increase the number of pulsations for a few minutes, but afterwards to diminish them in a greater ratio.

When experiments are made with any particular view, every thing else is kept entirely out of sight, and the experimenter is irresistibly led to the wished for result. Least on this account I might be led to false conclusions, I have omitted my own experiments, and taken those of Dr. Moore as the ground-work of my reasoning: For this purpose I have made the following analysis of his experiments:

Analysis of Dr. Moore's Experiments.

Exp. 1.—One grain of powdered digitalis was taken with the pulse at 72 pulsations in a minute. In 35 minutes it rose to 78, and from thence fell 63 pulsations per minute, in 85 minutes. Thus one grain raised the pulse six beats in thirty-five minutes, and reduced twelve beats below its standard, or eighteen below its artificial elevation, in eighty-five minutes.

* See Caldwell's Medical Theses, 1805.

Exp. 2—This experiment is not given with the same detail as the preceding and following, though the result is similar, and is therefore omitted.

Exp. 3.—Three grains of digitalis were taken with the pulse at 60, its natural healthy standard. In thirty minutes it was reduced to 54, without previous elevation. From thence it varied between 50 and 60 beats a minute, until, as the author himself expresses, (upon whom the experiment was made) " in two hours the nausea was so great that it was with difficulty I could avoid vomiting, and my pulse did not appear (for it was not counted) to be more than forty strokes in a minute."

Exp. 4.—Forty minutes after taking three grains of digitalis, Dr. Enoch Wilson had his pulse raised from 66 to 72 pulsations in a minute; but in 85 minutes more it was reduced from 72 to 58. Here was an increase of six pulsations in the space of 40 minutes, and a decrease of eight below its standard, or fourteen below its artificial elevation, in 85 minutes.

Exp. 4.—Four grains of digitalis raised the pulse four beats in 15 minutes, and from thence it varied, till in 65 minutes it regained its standard, which was diminished in strength. Observations on the pulse were no longer continued. The further consequence of this dose was to produce vertigo, nausea, sleepiness, three dejections, and sensations similar to those following a drunken debauch.

Exp. 6.—To a black man six grains of digitalis were given with a pulse of 90 beats. In two hours

it was reduced to 70, without previously raising it. Sleepiness, nausea, pain in the stomach, and then in the bowels, followed its exhibition. " I gave digitalis (says Dr. Moore) to the same man several times, in similar doses, with exactly the same effects, only in a more moderate degree: it did not in any instance raise the pulse above the natural standard."

Exp. 7.—Three grains of digitalis raised Dr. E. Willson's pulse from 60 to 72 beats in fifty minutes. It returned to 60 in two hours, beyond which no observation was made.

Exp. 8.—By three grains of digitalis the pulse was raised eighty beats in fifteen minutes, and reduced ten in fifty-eight minutes.

These experiments, and other similar ones made by myself, prove two things: first, that digitalis, in many instances, increases the number of pulsations for a limited time; and, second, that a depression then takes place to a greater degree. Without further observation we are immediately led to this conclusion, that the sedative effect of digitalis is greater than its stimulant, since the latter is limited, less, and not so permanent.

That the stimulant effect of digitalis is limited may be seen by the pulse gaining its maximum of pulsations in forty or fifty minutes, and even sometimes in fifteen (Exp. 5th and 8th). It is also less, for by the first experiment the pulse was raised six beats, and diminished twelve below the standard: by the fourth it was raised six, and diminished eight; by the eighth it was increased eight beats, and diminished ten.

The fifth and seventh experiments differ in their results from the others, for in these the number of pulsations was only increased, and their maximum was induced in a short time. On the other hand, however, the third and sixth experiments are more striking, as a diminution of the pulsations took place, and did not gain their minimum in two hours more, besides being accompanied by those effects which attended the other experiments, viz. vertigo, nausea, &c. which are generally reducers of arterial action.

The greater permanency of the sedative or depressing effect of digitalis should mark its character among the articles of the Materia Medica. In all the experiments in which the pulse was first elevated and then depressed, notwithstanding the pulse gained its maximum of elevation in less time than it arrived at its minimum of depression, yet, the ratio of decrease was greater than the increase.

If we take the first experiment it will be proved thus: The pulse was raised six strokes in 35 minutes, and then depressed eighteen in 85 minutes. Thus, then, as 35 : 6 : : 85 : 14·57; that is to say, according to the ratio of the increasing pulsations, the diminished number ought to be 14·57, for the time given, instead of the real number 18.

The ratio will not be the same in the other experiments, but still it will exceed the ratio of increasing pulsations.

Here then, we find, that by a partial view of the subject Dr. Moore has been led into an error, in

order to confirm the opinion of his professor (Dr. Barton*) that digitalis is a stimulant.†

From what has been said we may make the following general deductions, viz. First, that digitalis has a sudden effect in elevating the pulse, that the depression which follows may have a greater effect, in as much as it is in a greater ratio. Second, that its use may be extended to all diseases where there is a high febrile excitement, and where the pulse requires reduction in the number of its pulsations, or in tension or hardness.

SECTION V.

Diseases in which Digitalis has been and may be properly used.

From the preceding view of the subject, and the deductions made therefrom, it is very easily known in what cases digitalis has been properly used, or may be used with any prospect of success. It is therefore only necessary to name the disease, and the propriety or impropriety of making digitalis the basis of a prescription will be evident. I have known it to be administered in pneumonia, acute rheumatism, pulmonary consumption, hemoptysis, and the various species of dropsy, &c. The use

* Professor of Materia Medica and Botany in the University of Pennsylvania.

† Should Dr. Moore ever meet with this free expression of my sentiments, I hope he will not consider it illiberal. I had commenced this view of the subject previous to my seeing his dissertation, and am convinced of its correctness from this examination of his experiments, and the cases accompanying this view.

of digitalis has been sanctioned in these several diseases, but its success in them has been by no means uniform; repeated failures, therefore, render a more particular examination necessary.

Pneumonia.

From the general principle which has been established, it will be naturally concluded that the use of digitalis is correct both in pneumonia, peripneumonia, and pneumonia pluritis. In these instances then we are guided by the correctness of the principle. Accordingly this medicine would not be given to the emaciated convalescent, still confined by debility; nor would it be deemed proper in the typhoid state of pneumonia. The correctness of this practice is likewise confirmed by the cases which will presently meet the reader's attention.

Rheumatismus.

Correct cases will be detailed to establish the proper use of digitalis in this disease, but it is only in the febrile state of rheumatism. Hence the principle is supported by practice in this case also.

Hemoptysis.

In all cases of active hemorrhage, the principle laid down must be our guide. But where hemoptysis occurs from a strain, sudden exertion, or blow, digitalis may be cautiously used with success, where the strength of the constitution or ha-

bit of body will allow reduction. Hemoptysis in most cases tends towards consumption; and where it is not accompanied by an inflammatory state of the system, if the discharge of blood is frequent or in considerable quantity, fever soon occurs, when digitalis may be safely used. In hemorrhages proceeding from debility or a want of action, digitalis I consider as a dangerous remedy. A late celebrated author (Dr. James Currie) writes according to my ideas on the use of the digitalis in hemorrhage. He says, " I have been less anxious to extend the use of the cold affusion to the phlegmasiæ and hemorrhagiæ, because a remedy has lately presented itself that greatly enlarges our power over the numerous diseases which are arranged under these orders—I mean the digitalis purpurea. This medicine may almost be said to be possessed of a charm for allaying inordinate action of the heart and arteries, and in this point of view as well as for its efficacy in some kinds of dropsy, particularly the hydrothorax, its introduction into medicine is one of the greatest benefits our science has received in modern times."*

Phthisis Pulmonalis.

Digitalis is no doubt serviceable at times, or in some of the stages of pulmonary consumption. Its indiscriminate use in this disease is generally laid aside. With a due regard to our principle for the exhibition of the foxglove, and its combination

* See Currie's Medical Reports on Water, vol. ii. p. 36. London. 1805.

with other medicines, consumption may be rendered less destructive. Dr. Beddoes has spoken with raptures on the use of digitalis in this disease; in his work on consumption he says, "I daily see many patients in pulmonary consumption advancing towards recovery with so firm a pace, that I hope consumption henceforward will as regularly be cured by foxglove as ague by Peruvian bark."* The cure of consumption by mercury or digitalis having failed with both separately, Dr. Currie recommends them in combination.†

The various stages, forms, and accompanying symptoms of consumption, render various methods of treatment necessary. Hence an accurate knowledge of the disease is not so easily obtained. If digitalis is used in consumption, it would be indicated in the first or inflammatory stage, and when it retains, for any length of time, as it sometimes does, a similarity to pneumonia, or a continual febrile appearance. Late European authors have been more limited in their praise of digitalis in this disease. Dr. Reid speaks with apparent modesty on this subject. He says that "digitalis is a remedy for pulmonary consumption in its earlier periods, which, under due regulations, and with sufficient attention to other circumstances of regimen and diet, may be employed with a prospect of almost invariable relief."‡

* Page 270, 8vo. Bristol. 1799.
† See Appendix to Currie's Reports.
‡ See John Reid on Consumption, p. 244. London. 8vo. 1806.

Dropsies.

According to nosological arrangement digitalis would be rejected in the cure of this class of diseases, for though it sometimes has a diuretic effect, its powerful sedative operation would counteract its other qualities in these cases of debility. Were it not that they sometimes take on a febrile appearance, digitalis would perhaps be totally inadmissible. I am informed that our celebrated countryman, Dr. Rush, in his lectures delivered in the University of Pennsylvania, always treats of the febrile states of dropsies. It is certain that these complaints do sometimes appear with a considerable degree of excitement, and here the exhibition of our medicine would be indicated. Hence we are enabled also to account for the salutary operation of powerful evacuating remedies in dropsies after bleeding, as calomel and jalap, practised by Dr. T. Sim,* of Virginia.

Let us examine the different species of dropsy, and observe how the principle of our practice will apply.

Hydrocephalus.

We have the testimony of Dr. Quin, as before observed, in favour of foxglove in the internal dropsy of the brain. Also of Dr. Rush,† that this is a disease of excitement. Thus practice and theory give to each their mutual support.

* See Medical Museum, vol. i. p. 316.
† Medical Inquiries.

Hydrothorax.

Although I am not able to lay cases before the reader of the good effects of digitalis in dropsy of the chest, yet I have no doubt of the application of our rule in certain forms of this disease. The authority of Dr. Currie, as before quoted, page 27, will serve as testimony on this head.

But perhaps the admission of this remedy may be extended still further in hydrothorax. We have seen that it possesses a power of lessening the irritability of the system, which is perhaps the consequence of its first diminishing the force of the circulation. When a serous effusion takes place in the cavity of the chest, and interferes with the expansion and compression of the lungs, the irritation which this produces being lessened by digitalis, will at least give the patient a better chance of bearing the disease, while this remedy, or some other in combination, may effect a cure, provided it be not pushed so as to depress the circulation to too great a degree.

Anasarca and Ascites.

In Dr. Quin's work on the dropsy of the brain, cases of anasarca are related as cured by this medicine. Anasarca, however, seldom appears alone, unless when symptomatic, or a precursor of a more general affection, accompanied by ascites. I have not been able to collect any cases of ascites with symptoms of excitement, save those of Dr. Sim just referred to. But I am informed by my

friend, Dr. Samuel Akerly, that he met with more than one case while house physician to the New-York Hospital, in which bleeding and other depleting remedies had the most beneficial effect. In such cases digitalis would speedily promote a cure. I here beg leave to offer my acknowledgments to the gentleman just named for his goodness in presenting me with most of the cases which conclude my dissertation.

On the subject of scrophula I can offer no testimony, as the disease is not very prevalent, and our knowledge of it so obscure, that cases are very seldom presented to the inspection or observation of students or young practitioners.

For the employment of digitalis in the cases which are attended with febrile excitement, the general principle which has been adopted will be a guide, but still there wants a greater detail of observation to ascertain these points with accuracy.

SECTION VI.

Cases illustrative of the Principles defended in this Dissertation.

Case 1.—*Pneumonia.*

" Downshire, a black man, aged 16 years, was received into the New-York Hospital on the 4th May, 1807, and dismissed cured in June following of pneumonia. He was received with a violent pain in the breast, cough, and expectoration with-

out blood. His pulse was full and quickened; skin hot and dry. A blister was applied to the breast, and an expectorant given, being first evacuated with sulphat of soda. He likewise took, four times a day, the following powder:

℞ Sulph. Sodæ, ʒj.
Pulv. Fol. Digital. gr. j. m. ft. pulv.

An attempt was unsuccessfully made to bleed him. He continued these powders and an expectorant, till he was very much relieved, and omitted them for a few days, when his complaint returned as severe as ever. A blister was again applied, and the same course continued, by which he got entirely well."

Case 2.—*Pneumonia.*

The following notes were taken of the case as it occurred in the winter of 1808:

"Feb. 25th, 1808. Margaret Thompson, a fat lusty woman, aged about 46, was seized with a severe pungent pain in the side a few days ago, which affects her breathing."

"Feb. 26th. Pain unabated, cough considerable, pulse not very full, skin but little excited, tongue whitish.

℞ Sal. Glaub. ℥j. statim sumendus.
℞ Sac. Ammon. ʒ ss. tussis urgent. sumend.
℞ Sulph. Sodæ, grs. x.
Pulv. Fol. Digital. gr. j. m. ft. pulv. capiat talem ter in die.

"The disease soon yielded without trouble to this treatment."

CASE 3.—*Hemoptysis.*

" James Bridge, aged 24, was received into the New-York Hospital 22d May, 1807, with hemoptysis.

" About two weeks previous he was carrying a burthen in a store, and was suddenly taken with a rising of blood from the lungs, which he discharged from the mouth to the amount of two quarts by his own estimation. In the two weeks previous to his coming to the Hospital he had six repeated discharges of blood, which reduced him to a skeleton, and rendered him hardly able to walk.

" He had been bled, and had a blister on his breast discharging when received. A teaspoonful of salt was immediately given him (according to Dr. Rush's prescription) and he was sent to the ward.

" Upon examining his pulse after resting, it was found small and quickened. The following prescription was then ordered, to be taken three times a day:

℞ Muri. Sodæ, ʒj.

Pulv. Fol. Digital. grs. ij. m. ft. pulv.

" May 23d. Had a small discharge of blood this morning. Has taken two doses of his medicine.

" May 25th. Feels better, pulse not so quick, nor small.

" 31st. Has taken his medicines regularly, and had no discharge since the 23d, except a small one to-day.

" June 1st. Has a considerable cough. Discharged to-day a quart or more of blood. Repeat the salt and digitalis four times a day.

" 2d. Cough continues.

℞ Ol. Amyg. dul. ℥j.
Muc. Gum. Arab. ℥vj.
Tinct. Opii Camph. ℥ss. m. Sumat cochlar. un. parv. frequenter in die.

" 3d. Cough continues. Had a small discharge to-day.

" 4th. Still coughs. No discharge of blood to-day. Repeat medicine. Apply a blister to the breast.

" June 11th. With the expectorant emulsion prescribed on the 2d, his cough has abated, and no discharge has taken place since the 3d. He has continued the salt and digitalis. Now feels remarkably well, is stronger, and feels an increasing appetite, which has been very bad till within a few days past. Pulse slow and moderately full.

" Afternoon. Died with a sudden and profuse discharge of blood. Upon inquiry I find the man has eaten a very hearty meal, which was contrary to the instructions given him. Besides his own allowance, he eat, unknown to the nurse, from his neighbour's mess: shortly after he was seized with a violent fit of coughing, which brought death upon him in a few minutes. An effort was made to bleed him, but too late, as the discharge, amounting to a quart and a half of arterial blood, was very sudden. After standing a short time it was covered with a layer or coat half an inch thick, being

very light in colour, and having a fine spongy texture almost resembling the lungs.

Examination.

" The abdomen being first opened, the stomach was observed to be distended with food. This being opened, its contents measured 34 ounces. They consisted of the natural secretions, and food of various kinds undigested, forming a mass of a blackish colour. There were several small clots of florid blood floating in it. The liver, spleen, and pancreas appeared natural, but the gall-bladder was collapsed, containing no bile, and the kidnies were full of small hydatids.

" The disease which was the immediate cause of the man's death existed in the left lung, which was very small, its substance destroyed, and firmly adhered on all sides. There was a small calculus in the lung.

" The right lung was of its natural colour, but full of tuburcles. It appeared to be preternaturally large, and divided into two lobes nearly in the middle, the superior part being subdivided into four smaller lobules. The heart was situated far in the left side of the chest, so that the pericardium adhered to the ribs some distance behind the cartilages.

Observations.

" This disease appears to have been induced by a malconformation of the lungs, which, if pre-

viously known, would have given little hopes of recovery. After the hemoptysis had commenced, the man must inevitably have died in a short time, but his life might have been protracted some time longer but for his own indiscretion. The clots of blood found in the stomach must have been swallowed in his last moments, when almost exhausted and gasping for breath."

CASE 4.—*Rheumatismus Acutus.*

" Margaret Fenton, aged 26 years, was received into the New-York Hospital May 1st, 1807, with acute rheumatism.

" She was affected with violent pains in the body, limbs, and head, with stiffness, and the greatest pain on moving. Her pulse was full, hard, and tense, skin hot and very dry.

" A saline cathartic was given her, and four grains of digitalis ordered in pills of one grain each, and, at the same time, a soap liniment to rub her body and limbs. In the course of the first week she was bled twice, each time to the amount of twelve ounces.

" The treatment with digitalis and soap liniment was continued to nearly the end of the month, when she was completely cured, but remained in the house for amenorrhœa, of which she complained before she was taken with rheumatism."

CASE 5.—*Rheumatismus Acutus.*

" Joseph Daily, aged 28 years, was received into

the New-York Hospital in the early part of June, 1807, with acute rheumatism, and discharged cured on the 22d of the same month.

" He was affected with violent pains in all his limbs, and swelling of the joints, attended by a full and hard pulse, a hot and dry skin. He was brought in a carriage, and unable to move himself when received into the hospital.

" After being admitted he was bled ℥xiv. and ordered the use of the tincture of capsicum externally. In the evening he was placed in a warm bath, and on coming out a scruple of Dover's powder was given him. One grain of digitalis in pill was prescribed to be taken four times a day.

" The digitalis and tincture of capsicum were used till he was discharged cured on the 22d June, 1807."

Case 6.—*Rheumatismus Acutus.*

" In January, 1808, George Jackson, a black man, aged 50 years, had application made for him at the City Dispensary for medical assistance.

" I found him (says Dr. Akerly) in bed, tormented with excruciating pain, which had increased for several days previous to my seeing him. His pulse was full and hard, tongue white, skin very hot, and both hands considerably swollen, which could not be moved without pain, bowels costive.

" Besides these, he had other accidental symptoms, which were increased by the complaint, not being part of it. About a year before he had re-

ceived a violent blow on the side and another on the head. There had been an occasional pain in these places, but now it was very much increased. His urine was also bloody, the blow on the side being received about the region of the kidney.

" From this violent febrile state of disease he had a rapid convalescence, for which, however, he was not bled. I ordered him a cathartic, and the following powders and embrocation:

℞ Sulph. Sodæ, ʒ ss.
Pulv. Fol. Digital. gr. j. m. ft. pulv. ter in die sumend.

℞ Spt. Camph. ʒ iij.
Tinct. Opii, ʒ j. m. the pained parts were rubbed with this, and a blister applied to the side.

" Not getting better in a few days, and his bowels continuing costive, I prescribed ten grains of calomel, which he took for four days successively, till his bowels yielded, taking one powder less of the digitalis and salt.

" He thence continued them and his embrocation, and in a few days was free from fever and pain. The swelling of his hands disappeared, and he began to convalesce, his pulse becoming moderate and soft."

THE END.